Essential Tremor (ET)

Essential Tremor of the Voice vs. Spasmodic Dysphonia

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Introduction

Certain neurologic conditions can cause people to have problems with their voice. These voice problems can often lead to more difficulty communicating throughout daily life. It is important that patients with neurological voice disorders are evaluated by an otolaryngologist, or ENT doctor, in addition to their neurologist to determine the diagnosis and discuss treatment options. Many patients with essential tremor also experience essential tremor of the voice. Essential tremor of the voice can often be confused with another neurologic voice disorder known as spasmodic dysphonia.

What is Essential Tremor?

Essential tremor is a disorder of the central nervous system that may result in tremulousness of the head, limbs, tongue, palate, and/or larynx. The tremor may occur while a structure is at rest or in action. For example, someone’s hand may be tremulous while resting in their lap, or it may not become tremulous until they reach for a cup of coffee on the table. Action tremor can occur while someone is purposefully moving the affected structure, or while postural muscles are contracting to hold the structure in the appropriate position. Essential tremor is characterized by rhythmic, involuntary movements of muscles during purposeful movements. Typically, essential tremor is absent at rest and maximal during the maintenance or termination of a movement. This is similar to essential tremor of the voice in that the voice box or larynx will only become tremulous when activated for voicing during speech.

What is Essential Tremor of the Voice?

Essential tremor may present as a generalized neurological disorder, affecting many structures of the body, or as an isolated symptom of the voice. Patients with essential tremor of the voice may not necessarily have generalized tremor in the limbs, trunk, or other major postural muscles. In other words, the voice tremor may be the only primary characteristic. The larynx, or voice box, is not the only structure which can cause essential tremor of the voice. Tremor of the voice can be caused when any of the structures in the speech system is affected. Essential tremor of the voice may be caused by tremor in the soft palate, tongue, pharynx, or even muscles of respiration. Extralaryngeal tremor (i.e., outside the voice box) has been reported in up to as many as 93% of patients with diagnosed essential tremor of the voice. Similarly, most patients with essential tremor of the voice also have tremor affecting their hands, leg, chin, or trunk.

Essential tremor seems to be associated with aging, although the reasons are still inconclusive. Most studies report average age of onset from the late 40s to early 50s. The highest prevalence of essential tremor of the voice is in the seventh decade of life. Heredity may affect the likelihood of developing tremor. The frequency (speed) of tremor is typically between 3 and 7 times per second. Medications that often reduce generalized or extremity tremor, typically are not as effective for the voice symptoms.

The most prominent voice symptom and diagnostic indicator for essential tremor of the voice is a periodic or rhythmic modulation of either frequency (i.e., pitch) or intensity (i.e., loudness) in the voice. This modulation is most noticeable during prolongation of a vowel. For this reason, tremor will be most apparent when someone is speaking vowel laden sentences (i.e., you were away all year). Tremor may become so severe that a stoppage of voice occurs. This is one of the reasons that essential tremor of the voice is often confused with spasmodic dysphonia. Both diseases, in certain speech contexts, will cause voice breaks, or stoppages during speech. Spasmodic dysphonia and essential tremor of the voice are also known to occur at the same time.

What is Spasmodic Dysphonia?

Spasmodic dysphonia (SD) is classified within a family of neurological conditions called focal dystonias. A
focal dystonia is a condition in which movement is abnormal in an isolated part of the body. SD causes abnormal movement of the vocal folds similar to the way a condition called blepharospasm causes abnormal contraction of the eyelid. SD is different from blepharospasm, however, in that its effects are only noticed during meaningful tasks (i.e., speech). Interestingly, vegetative functions of the larynx, such as coughing, laughing, whispering, and even singing, may be normal.

Two types of SD are well described in the medical literature: abductor and adductor type. The two are clinically distinguishable by the way the voice sounds.

In the case of adductor type SD, adductor muscles—or “closing” muscles of the vocal folds—can spasm during connected speech. The voice sounds strained or strangled with intermittent stoppages of the voice. The severity can range from mild, or barely noticeable, to so severe that any attempt at producing a word brings great effort to the patient.

Abductor type SD is caused by spasms of the muscles of abduction, or “opening,” which cause sudden and intermittent escapes of air during speech. These spasms occur during the transition from voiceless consonants (i.e., t, k, s) to vowels (i.e., i, u, a).

People with either type can often describe certain words which are harder for them to produce. For example, a patient with abductor type SD may report it is very hard for him or her to shout “nice shot!” at a sporting event due to the transition from the “sh” sound to the voiced vowel “o” in the word “shot.”

The onset of spasmodic dysphonia is generally believed to be during middle age, somewhere between the late 40s and early 50s. Researchers have yet to establish an exact gender ratio; however, most clinicians agree that the majority of cases they see are women. The onset of spasmodic dysphonia is typically more gradual, but there are some reports of rapidly worsening symptoms.

What treatments are available?
Medical therapy is generally not effective for patients with SD, while medical therapy for ET of the voice is significantly less effective than for treatments for extremity tremor. Voice therapy is also not typically effective at improving voice problems caused by SD and has a limited role in essential tremor. Currently, the main treatment for both ET of the voice and SD involves the injection of very small amounts of botulinum toxin, otherwise known as botox™ into the vocal folds or other muscles in the larynx. Botox injections to treat voice disorders are typically administered by otolaryngologists who specialize in voice disorders. Some neurologists also treat neurologic voice disorders with botox. These injections can be done awake in the office directly through the skin of the neck, just under the thyroid notch or “adam’s apple.” The physician will often use some form of numbing medicine to numb the skin around the injection site prior to administering the botox.

With these injections, muscle contraction is temporarily blocked by the nerve endings and the vocal folds are temporarily weakened. When the muscles are weakened from botox, tremor and spasms are reduced. This leads to a more stable and effortless voice for many patients, allowing for more effective communication. In the case of ET of the voice and SD, what we find is that the spasms and/or tremor do not return for a period of 3-5 months.

Summary
SD and essential tremor of the voice can significantly impair people’s ability to speak and communicate effectively. Although the disorders are distinct, some overlap of symptoms can occur. Severity of voice changes can range from barely noticeable, to patients being unable to effectively communicate. Treatment is available for both conditions. If you are experiencing voice changes relating to your tremor, or suspect you may have SD in addition to your tremor, ask your neurologist about treatment and potentially a referral to an otolaryngologist.